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| 09/829,500      | 04/09/2001  | Craig M. Gates       | 10003884-1          | 6732             |

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HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
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EXAMINER

MUTSCHLER, BRIAN L

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1753

DATE MAILED: 07/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/829,500

Applicant(s)

GATES ET AL.

Examiner

Brian L. Mutschler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 and 16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of Group II, claims 15, 17 and 18, in Paper No. 4 is acknowledged. The traversal is on the ground(s) that "examination of all claims 8-18 will require substantially overlapping searches in the ink-jet printing field for structural features, fabrication methods and ink-jet printhead features based on applicants' unique printhead mandrel" (see page 2 of Applicant's response). This is not found persuasive because the search for each of the groups does not overlap. While claim 15 is dependent on the method of claim 8, claim 15 is a product-by-process claim. As stated in the MPEP 2113:

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted)

Therefore, claim 15 is treated as a product claim and is only limited insofar as the process by which it is made governs the structure of the product.

The requirement is still deemed proper and is therefore made FINAL. Claim 15 should be rewritten in independent form incorporating all of the limitations of the claim from which it depends.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: **407** as shown in Figure 4. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The disclosure is objected to because of the following informalities:
- a. On page 9 at line 18, "photoresist 207" should be changed to --photoresist 205'--.
  - b. On page 9 at line 19, "resist 205" should be changed to --resist 205'--.
- Appropriate correction is required.

### ***Claim Objections***

4. Claim 17 is objected to because of the following informalities:
- a. In claim 17 at line 3, please change "hereon" to --thereon--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The formula of claim 18 is indefinite because  $\tan\Theta$  does not yield a definite value for all values of  $\Theta$ . For example, if  $\Theta=90^\circ$ ,  $\tan\Theta$  is indefinite. Furthermore, when  $\Theta$  approaches  $90^\circ$ ,  $\tan\Theta$  approaches infinity, which would yield a negative bore diameter.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(f) he did not himself invent the subject matter sought to be patented.

8. Claim 15 is rejected under 35 U.S.C. 102(a) as being anticipated by Applicant's admissions of prior art made in the instant disclosure.

In the instant disclosure, Applicant discloses a mandrel for electroforming an ink-jet printhead comprising features that define the shape, location and geometry of the electroformed printhead (see Figure 1; page 2, line 16 to page 3, line 6).

Since the admissions of prior art teach all of the structural limitations recited in the instant claim, the admissions of prior art are deemed to be anticipatory.

9. Claims 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Trueba (U.S. Pat. No. 5,560,837).

Trueba discloses a mandrel for forming an ink-jet component, e.g., a nozzle plate, wherein the mandrel comprises a glass substrate **102** having a metal layer **106** formed thereon (figs. 1A-1I). A dielectric layer **110** is formed on the metal layer **106** and etched to form the completed mandrel (figs. 1A-1I; col. 2, lines 1-28). The mandrel has features for electroforming an ink-jet component (col. 2, lines 1-28).

Since Trueba teaches all of the structural limitations recited by the instant claims, the reference is deemed to be anticipatory. The "features" recited in the claims have no structural limitations other than to define areas on the electroformed product. The features on the mandrel of Trueba define the shape, location and geometry of the electroformed component.

10. Claims 15 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Te (U.S. Pat. No. 6,586,112).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Te discloses a mandrel for forming an orifice plate comprising a glass substrate **6**, a metal layer **4** formed on the glass substrate **6**, and a dielectric layer **8** formed on the metal layers **4** formed in areas of the features (figs. 1A and 5). The features in the mandrel of Te are defined by gaps **20** or steps **40** (figs. 3A and 5; col. 5, lines 51-62). The features define the shape, location and geometry of the electroformed orifice.

Since Te teaches all of the structural limitations recited in the instant claims, the reference is deemed to be anticipatory.

11. Claims 15 and 17 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter.

Te discloses a mandrel for forming an orifice plate comprising a glass substrate **6**, a metal layer **4** formed on the glass substrate **6**, and a dielectric layer **8** formed on the metal layers **4** formed in areas of the features (figs. 1A and 5). The features in the

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mandrel of Te are defined by gaps **20** or steps **40** (figs. 3A and 5; col. 5, lines 51-62).

The features define the shape, location and geometry of the electroformed orifice.

Since Te teaches all of the structural limitations recited in the instant claims, the reference is deemed to be anticipatory and to establish Te as the inventor of the invention as claimed in the instant application.

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admissions of prior art made in the instant disclosure in view of Trueba (U.S. Pat. No. 5,560,837).

Regarding claim 17, Applicant has disclosed a prior art mandrel comprising a glass substrate coated with a conductive film (see Figure 1; page 2, line 16 to page 3, line 6). Applicant further discloses, "Non-conductive discs are define on the surface of the conductive film for determining the location and size of the orifices" (p. 2, lines 18-19). These features are used for electroforming the printhead. Furthermore, Applicant discloses that the bore diameter,  $D_{\text{bore}}$ , the mandrel pad (non-conducting region) diameter,  $D_{\text{pad}}$ , and the thickness,  $T$ , of the electroformed sheet are related by the following equation:



$$D_{\text{bore}} = D_{\text{pad}} - 2T \quad \text{Equation 1.}$$

In claim 18, the following equation defines the relationship between the bore diameter,  $D_{\text{bore}}$ , the base diameter,  $D_{\text{base}}$ , the thickness of the electroformed sheet,  $T$ , and the taper angle,  $\Theta$ :

$$D_{\text{bore}} = D_{\text{base}} - 2T \tan \Theta \quad \text{Equation 2.}$$

Since the diameter of the pad,  $D_{\text{pad}}$ , is equivalent to the diameter of the base,  $D_{\text{base}}$ , the prior art relationship anticipates the limitations of claim 18 when the taper angle,  $\Theta$ , is equal to  $45^\circ$ .

The prior art mandrel disclosed by the Applicant differs from the instant invention because the disclosed mandrel does not specify whether or not the conductive layer is a metal layer, as recited in claim 17.

Trueba discloses a mandrel similar to the disclosed prior art mandrel, wherein the conductive layer is formed by a metal layer **106** (col. 2, lines 1-28). In another embodiment, chrome metal is a preferred material for the conductive layer **205** (col. 4, lines 35-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the mandrel disclosed by the Applicant as prior art to use a metal layer as the conductive layer because Trueba teaches that chrome is a preferred material for forming the conductive layer in an electroforming mandrel.

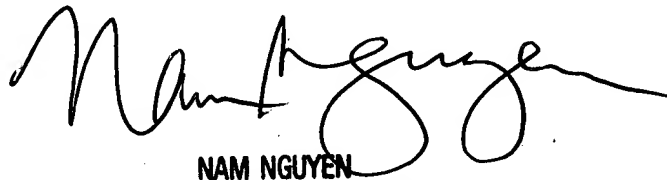
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**Conclusion**

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L. Mutschler whose telephone number is (703) 305-0180. The examiner can normally be reached on Monday-Friday from 8:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



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SUPERVISORY PATENT EXAMINER  
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blm  
July 15, 2003